

**WHEREFORE IT IS CLAIMED:**

1. A tampon applicator comprising a barrel, said barrel having a tapered insertion end with a plurality of petals, wherein the insertion end
- 5 has a taper ratio greater than 1 to about 8,

wherein the taper ratio is a length of a projection of the insertion end taper along a longitudinal axis of the barrel to a length of a projection of the insertion end taper along a radius of the barrel at a base region of the

10 plurality of petals; and

wherein said plurality of petals each have a thickness of about 0.004 inches to about 0.022 inches.

- 15 2. The applicator of claim 1, wherein said taper ratio is about 1.3 to about 5.

3. The applicator of claim 1, wherein said taper ratio is about 1.4 to about 2.3.

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4. The applicator of claim 1, wherein said taper ratio is about 1.45 to about 1.75.

5. The applicator of claim 1, wherein said plurality of petals each
- 25 have a thickness of about 0.008 inches to about 0.018 inches.

6. The applicator of claim 1, wherein said plurality of petals each have a thickness of about 0.009 inches to about 0.013 inches.

7. The applicator of claim 1, wherein said plurality of petals have  
5 a substantially uniform thickness.

8. The applicator of claim 7, wherein said substantially uniform thickness of each of said plurality of petals varies no more than about 25% across an entire area of said petals.  
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9. The applicator of claim 7, wherein said substantially uniform thickness of each of said plurality of petals varies no more than about 10% across an entire area of said petals.

15 10. The applicator of claim 7, wherein said substantially uniform thickness of each of said plurality of petals varies no more than about 2% across an entire area of said petals.

11. The applicator of claim 1, wherein said barrel has a barrel  
20 taper ratio represented by a ratio of a largest radius of the barrel to a radius of the barrel at a base of the insertion tip of about 1.2 to about 8.

12. The applicator of claim 11, wherein said barrel taper ratio is about 1.25 to about 2.  
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13. The applicator of claim 1, wherein said barrel has a fingerrip.

14. The applicator of claim 13, wherein said fingerrip has at least one gripping structure.

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15. The applicator of claim 14, wherein said at least one gripping structure is circumferentially disposed around said fingerrip.

16. The applicator of claim 14, wherein said at least one gripping  
10 structure is selected from the group consisting of one or more abrasive materials, embossments, grooves, high wet coefficient of friction materials, lances, pressure sensitive adhesives, protuberances, slits, treads, and any combinations thereof.

15 17. The applicator of claim 14, wherein said at least one gripping structure is formed in a shape selected from the group consisting of arc, circle, concave, cone, convex, diamond, hexagon, line, octagon, oval, pentagon, polygon, rectangle, rib, square, triangle, and any combinations thereof.

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18. The applicator of claim 14, wherein said at least one gripping structure is raised, depressed, or a combination thereof.

19. The applicator of claim 1, wherein said plurality of petals is  
25 about two petals to about eight petals.

20. The applicator of claim 19, wherein each adjacent pair of said about two petals to about eight petals is separated by a radial slit.

21. The applicator of claim 20, wherein said radial slit extends  
5 below a base region of said about two petals to about eight petals.

22. The applicator of claim 21, wherein said base region has at least one circumferential groove.

10 23. The applicator of claim 22, wherein said barrel has a maximum outside diameter less than 0.598 inches.

24. The applicator of claim 23, further comprising a ratio of an extension of said radial slit beyond said groove to said maximum outside  
15 diameter of said barrel of about 0.002 to about 1.

25. The applicator of claim 23, further comprising a ratio of a width of said radial slit at said groove to said maximum outside diameter of said barrel of about 0.002 to about 0.25.

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26. The applicator of claim 22, wherein said barrel has a maximum outside diameter of greater than or equal to 0.598 inches to less than 0.658 inches.

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27. The applicator of claim 26, further comprising a ratio of an extension of said radial slit beyond said groove to said maximum outside diameter of said barrel of about 0.002 to about 0.669.

5 28. The applicator of claim 26, further comprising a ratio of a width of said radial slit at said groove to said maximum outside diameter of said barrel of about 0.002 to about 0.167.

29. The applicator of claim 22, wherein said barrel has a  
10 maximum outside diameter greater than or equal to 0.658 inches.

30. The applicator of claim 29, further comprising a ratio of an extension of said radial slit beyond said groove to said maximum outside diameter of said barrel of about 0.001 to about 0.608.

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31. The applicator of claim 29, further comprising a ratio of a width of said radial slit at said groove to said maximum outside diameter of said barrel of about 0.001 to about 0.152.

20 32. The applicator of claim 19, wherein said about 2 to about 8 petals have a weakened base region formed by bending said petals back and forth, thereby breaking one or more bonds.

33. The applicator of claim 1, wherein said barrel is formed from a  
25 material selected from the group consisting of biopolymer, cardboard,

cardboard laminate, heat shrink plastic, paper, paper slurry, paper laminate, plastic, plastic tubing, pulp slurry, pulp-molded paper, and any combinations thereof.

- 5           34.     The applicator of claim 1, wherein said barrel is formed from cardboard.

35.     The applicator of claim 1, wherein said barrel has a surface that is coated with a material selected from the group consisting of  
10 cellophane, cellulose, epoxy, lacquer, nitrocellulose, nylon, plastic, polyester, polylactide, polyolefin, polyvinyl alcohol, polyvinyl chloride, silicone, wax, and any combinations thereof.

36.     The applicator of claim 35, wherein said surface is selected  
15 from the group consisting of an outer surface, an inner surface, and any combination thereof.

37.     A tampon applicator having a barrel with a tapered insertion  
20 end,

- wherein said tapered insertion end has a taper ratio represented by a ratio of a length of a projection of the insertion end taper along a longitudinal axis of the barrel to a length of a projection of the insertion end taper along a radius of the barrel at a base region of one or more petals of  
25 greater than 1 to about 8, and

wherein said barrel is formed from a material selected from the group consisting of cardboard, cardboard laminate, paper, paper laminate, pulp slurry, paper slurry, biopolymer, pulp-molded paper, and any combinations thereof.

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38. The applicator of claim 37, wherein said taper ratio is about 1.5 to about 5.

39. The applicator of claim 37, wherein said taper ratio is about  
10 1.4 to about 2.3.

40. The applicator of claim 37, wherein said taper ratio is about 1.45 to about 1.75.

15 41. The applicator of claim 37, wherein said one or more petals each have a thickness of about 0.008 inches to about 0.018 inches.

42. The applicator of claim 37, wherein said one or more petals each have a thickness of about 0.009 inches to about 0.013 inches.

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43. The applicator of claim 37, wherein said one or more petals have a substantially uniform thickness.

44. The applicator of claim 43, wherein said substantially uniform  
25 thickness of each of said one or more petals varies no more than about

25% across an entire area of said one or more petals.

45. The applicator of claim 43, wherein said substantially uniform thickness of each of said one or more petals varies no more than about
- 5 10% across an entire area of said one or more petals.

46. The applicator of claim 43, wherein said substantially uniform thickness of each of said one or more petals varies no more than about 2% across an entire area of said one or more petals.

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47. The applicator of claim 37, wherein said barrel has a barrel taper ratio represented by a ratio of a largest radius of the barrel to a radius of the barrel at a base of the insertion tip of about 1.2 to about 8.

- 15 48. The applicator of claim 47, wherein said barrel taper ratio is about 1.25 to about 2.

49. The applicator of claim 37, wherein said barrel has a fingergrip.

- 20 50. The applicator of claim 49, wherein said fingergrip has at least one gripping structure.

51. The applicator of claim 50, wherein said at least one gripping structure is circumferentially disposed around said fingergrip.

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52. The applicator of claim 50, wherein said at least one gripping structure is selected from the group consisting of one or more abrasive materials, embossments, grooves, high wet coefficient of friction materials, lances, pressure sensitive adhesives, protuberances, slits, treads, and any combinations thereof.

53. The applicator of claim 50, wherein said at least one gripping structure is formed in a shape selected from the group consisting of arc, circle, concave, cone, convex, diamond, hexagon, line, octagon, oval, pentagon, polygon, rectangle, rib, square, triangle, and any combinations thereof.

54. The applicator of claim 50, wherein said at least one gripping structure is raised, depressed, or a combination thereof.

55. The applicator of claim 37, wherein said one or more petals is about two to about eight petals.

56. The applicator of claim 55, wherein an adjacent pair of said about two to about eight petals is separated by a radial slit.

57. The applicator of claim 56, wherein said radial slit extends below a base region of said about two to about eight petals.

58. The applicator of claim 57, wherein said base region has at least one circumferential groove.

59. The applicator of claim 58, wherein said barrel has a  
5 maximum outside diameter less than 0.598 inches.

60. The applicator of claim 59, further comprising a ratio of an extension of said radial slit beyond said groove to said maximum outside diameter of said barrel of about 0.002 to about 1.  
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61. The applicator of claim 59, further comprising a ratio of a width of said radial slit at said groove to said maximum outside diameter of said barrel of about 0.002 to about 0.25.

15 62. The applicator of claim 58, wherein said barrel has a maximum outside diameter of greater than or equal to 0.598 inches to less than 0.658 inches.

63. The applicator of claim 62, further comprising a ratio of an  
20 extension of said radial slit beyond said groove to said maximum outside diameter of said barrel of about 0.002 to about 0.669.

64. The applicator of claim 62, further comprising a ratio of a width of said radial slit at said groove to said maximum outside diameter of  
25 said barrel of about 0.002 to about 0.167.

65. The applicator of claim 58, wherein said barrel has a maximum outside diameter greater than or equal to 0.658 inches.

66. The applicator of claim 65, further comprising a ratio of an extension of said radial slit beyond said groove to said maximum outside diameter of said barrel of about 0.001 to about 0.608.

67. The applicator of claim 65, further comprising a ratio of a width of said radial slit at said groove to said maximum outside diameter of said barrel of about 0.001 to about 0.152.

68. The applicator of claim 37, wherein said one or more petals have a weakened base region formed by bending said petals back and forth, thereby breaking one or more bonds.

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69. The applicator of claim 37, wherein said barrel is formed from cardboard.

70. The applicator of claim 37, wherein said barrel has a surface that is coated with a material selected from the group consisting of cellophane, cellulose, epoxy, lacquer, nitrocellulose, nylon, plastic, polyester, polylactide, polyolefin, polyvinyl alcohol, polyvinyl chloride, silicone, wax, and any combinations thereof.

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71. The applicator of claim 70, wherein said surface is selected from the group consisting of an outer surface, an inner surface, and any combination thereof.

5 72. A tampon applicator comprising a tapered barrel and an insertion tip, wherein said tapered barrel has a taper ratio of about 1.2 to about 8,

wherein the taper ratio is a ratio of a largest radius of said tapered  
10 barrel to a radius of said tapered barrel at a base region of said insertion tip.

73. The applicator of claim 72, wherein said taper ratio is about 1.25 to about 2.

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